

CLAIMS

1. A power steering pump comprising:

a housing defining a bore having an axis, a fluid discharge port communicating with the bore at a first axial location, and a fluid bypass port having an opening communicating with the bore at a second axial location, said bore comprising a first bore end and a second bore end;

a pump outlet adjacent the first bore end;

a flow control valve slideably received in the bore for opening and closing the fluid bypass port, said flow control valve defining an inlet for opening the fluid bypass port for admitting fluid thereto, wherein the inlet has a size dependent upon the position of the flow control valve within the bore; and

electrical means connected to the flow control valve through the second bore end and adapted for sliding the flow control valve to vary the size of the inlet and thereby regulate flow of fluid to the fluid bypass port.

2. A power steering pump in accordance with claim 1 wherein the flow control valve slides axially to vary the size to the inlet.

3. A power steering pump in accordance with claim 1 wherein the flow control valve rotates to vary the size to the inlet.

4. A power steering pump in accordance with claim 1 further comprising means for biasing the valve in the open position.

5. A power steering pump in accordance with claim 1 further comprising pumping elements disposed within the housing, said pumping elements comprising a cam chamber and a rotor having retractable vanes disposed within the cam chamber.

6. A power steering pump comprising:

a housing defining a bore having an axis, a fluid discharge port communicating with the bore at a first axial location, and a fluid bypass port having an opening communicating with the bore at a second axial location, said bore comprising a first bore end and a second bore end;

a pump outlet adjacent the first bore end;

pumping elements disposed within the housing for pumping fluid to said fluid discharge port and communicating with said bypass port for drawing fluid therefrom;

a flow control valve slideable within the bore between a closed position wherein the flow control valve closes the fluid bypass port and an open position wherein the flow control valve cooperates with the fluid bypass port to define an inlet for admitting fluid thereto, said inlet having a size dependent upon the position of the flow control valve relative to the fluid bypass port;

a plunger adjacent the second bore end and operatively connected to the flow control valve, said plunger being responsive to an applied electromagnetic field to slide the flow control valve between the closed position and the open position and to vary the position of the flow control valve in the open position to adjust the size of the inlet and thereby regulate the flow of fluid into the fluid bypass port; and

a spring operatively coupled to the flow control valve for biasing the flow control valve in the open position;

an electromagnetic coil for applying an electromagnetic field to the plunger.

7. A power steering pump in accordance with claim 6 wherein the pumping elements comprise a cam chamber and a rotor having retractable vanes disposed within the cam chamber.

8. A power steering pump in accordance with claim 7, wherein the means comprises a coil spring.

9. A power steering pump comprising:

a housing defining a bore having an axis, a first bore end and a second bore end, a fluid discharge port communicating with the bore at a first axial location proximate to the first end, and a fluid bypass port communicating with the bore at a second axial location proximate to the second bore end;

a pump outlet at said first bore end;

a flow control valve slideable within the bore between a closed position wherein the flow control valve closes the fluid bypass port and an open position wherein the flow control valve cooperates with the fluid bypass port to define an inlet for admitting fluid thereto, said inlet having a size dependent upon the position of the flow control valve relative to the fluid bypass port;

a tubular extension sealingly mounted onto the housing at said second bore end;

a plunger disposed within the tubular extension and operatively connected to the flow control valve,

a spring engaging the plunger for biasing the flow control valve in the open position; and

an electromagnetic coil disposed about the extension and adapted for applying an electromagnetic field to the plunger to vary the size of the inlet and thereby regulate the flow of fluid into the fluid bypass port.

10. A power steering pump in accordance with claim 9 wherein the extension includes an end cap, and wherein plunger includes a rear end adjacent the end cap and a pressure equalization passage extending from the rear end and communicating with fluid adjacent the flow control valve.